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On the Difference in the Rendering of Light and Shade in Photography and Painting.

The grave charge hitherto brought against photography of falsifying nature in the incorrect translation of various colors into monochrome, is no longer so persistently urged by painters when any claim is made by the photographer to artistic standing.

Surely photography could not expect to take any position in art while it made no perceptible distinction in shade, between the fruit and the leaves, in delineating an orange tree. But thanks to the labors of Ives, Abney, Eder, Mallman and Vogel, methods have been discovered of modifying the color relations.

Much remains to be done; but the very beautiful results which have been accomplished, especially in the reproduction of oil paintings, give us hope that before long the sensitive film will have the power of rendering, in their true intensity, the high lights of objects in nature or in a painting, even though they be red or yellow, and the deep shadows, though they be blue; but we think there is another accusation to be brought against photography, not so serious perhaps, but still in its way in the path of art.

Does photography always represent the relations of light and shade in an artistic manner, supposing it possessed of the ability to correctly translate the color tone in monochrome? or, in other words, does photography represent natural objects in the same manner as a painter would? We think there is a difference in the disposition of the light and shade.

Our attention was called to this difference by comparing the photographs of high towers against a clear sky with paintings and engravings of similar subjects by distinguished artists.

In the photographs, the upper part of the tower is more highly lighted than the bottom, while in the paintings and engravings the higher part is dark.

Now, which is correct? Does the painter violate nature to create an artistic effect, for surely his method is the more pleasing and picturesque; or does he represent things just as they are in nature?

We cannot conceive how any violation of nature can result in artistic pleasure, yet, at first thought, the method of the painter seems not only out of harmony with the condition of actual things, but against common sense.

Is it possible that a high tower against a cloudless sky can be less illuminated at the top than at the bottom? Shall we give the verdict for the photographer?

Let us first look into the matter, and try to discover why the painter, in his apparent violation of nature, pleases our artistic sense.

The painting is perfectly correct, although the photograph represents the tower exactly as it is illuminated; but we must have recourse to a physiological reason to justify the painter.

Art must represent Nature as it is presented to our senses, not as things actually are. The painter of animal-life will not, in the future, represent his pictures of animals in motion with their

legs twisted in the odd manner which Mr. Muybridge has demonstrated to be the actual truth. No, he shall continue to depict the swiftly moving horse, just as the image presents itself to the normal eye. And so the landscape painter shall paint his tower as it appears to our vision.

But, why does the high tower against a a cloudless sky show the upper part dark?

There is a peculiarity of the retina which shows itself when we exercise the eye, and which has its influence in works of art. If we place a bright silver coin upon a dark table and center the eye upon it for a few minutes, when we remove the coin for an instant, there is a white spot in its place, which almost immediately becomes black.

If a red wafer is placed upon a sheet of paper, and we look at it intently, on removing the wafer the spot will appear green. If we look upon a yellow wafer, on removal it will seem blue, the complimentary color always showing itself, This phenomenon is explained by supposing the nerve to be so exhausted by the continued action of the special rays, that it momentarily becomes insensible to their influence, and the effect of the rays of an opposite kind is only transmitted to the brain. Let us see now how this sensibility produces an effect where there is, strictly speaking no color but only light and shade, as in the case of our tower against the sky. We know the highest part of the tower is in the brighest illumination, yet we do not actually so see it. It never so appears to our eye. The reason is obvious; when we look at the steeple or tower, a great part of the retina is opposed to the light of the sky, and on shifting the eye to any particular part, the light which is reflected from that part falls upon the retina where it has been exhausted by the direct light from the sky, and consequently that part appears dark.

A very simple way of convincing oneself of this peculiarity of the retina, is to look intently for a minute at an open window in a room, and then to direct the eyes to the wall, the panes will appear dark, while the mullions look light.

Painters take advantage of this peculiarity of the eye. They create an effect not only by the contrasts of lights and shades but, also by contrasts of colors. The bright carnations for instance which in themselves would be glaringly offensive even painful to the eye, are softened down from their exaggeration by some contiguous colors which catch the eye, affect the retina, let us say tire it first, so that the two impressions together produce a harmonious effect, which seems natural although it actually is not so. If the coloring of a picture be too warm, with subtility of art the painter introduces some color, which rendering the eye insensible to the red and yellow rays increases the susceptibility to the blue and violet rays. Every ray of the warm red, is actually transmitted to the retina, but the impression is modified by the colder colors, a portion of the red is for the moment lost, and the picture appears less warm because the opposite rays have prevailing influence. We never really see all the colors in their actual degree of intensity at the same time when placed together. The eye alternately shifts from one to the other, and there is a modification of all. This is the harmony the painter strives after. It is art, but it is at the same time truth to nature. When we look at a beautful landscape we do not actually see the colors as they are transmitted by vibrations to the nerve of the eye. No one who desires to enjoy a lovely prospect ever fixes his eye intently upon any individual portion of a scene to the exclusion of all the rest, but the eye wanders over the beautiful prospect and returns as from a delightful excursion. It receives a multitude of varied and modified impressions, and the result is a pleasing picture, just such as the painter depicts upon the canvas only infinitely more beautiful.

Now, I think this is the most serious objection which can be brought against photography, considered in its relation to art. Supposing it were possible to impress upon the sensitive film the colors, could we represent nature as it appears to the eye in its harmonious blending of tints? I fear not.

The definite vibrations, corresponding to the various colors, would be impressed

upon the sensitive surface, modified only by the light transmitted by reflection. We should have the actual color of the objects, not the color which the eye beholds, and the result could not be as harmonious.

Even in the translation of the colors of nature in monochrome, beautiful as are some of the results of photography, no comparison can be made with the work of the artist in the harmony of light and shade, for the same physiological reason, although the photograph may far transcend in delicacy and beauty of detail the picture of the artist.

For rendering of form, however, the human eye, guided by the most delicate touch, can not approach the pencil of light.

ON PHOTO-MICROGRAPHY.

Read before the Photographic Society of Philadelphia, by W. H Walmsley.

I confess to some feelings of hesitation in appearing before you this evening with a paper on the above subject. "Walmsley's Bugs," as some facetious fellow members have dubbed my occasional displays of microscopic objects, projected upon the screen by means of our optical lantern, may not prove to be an interesting theme to many of you, although its scope is boundless. But having been honored by an invitation to read a paper here, I think it proper to choose a subject with which I am somewhat familiar, even at the risk of presenting one which may not be of special interest to all of you. If, however, I can be instrumental in turning the attention of even a single member toward this delightful branch of photography, I shall be amply recompensed for the slight labor involved in so doing.

During the winter interregnum, when out-door work with the camera is generally uncomfortable, if not impracticable, we recall our past summer's experiences by making prints and lantern slides, from the negatives obtained at that time; and many a pleasant day is repeated in retrospection thereby. Thanks to the general introduction of bromide paper, we are rendered independent of day-light for this work, a great boon to those whose only leisure comes in the long evenings of winter. The making of a negative is, however, to very many, even a greater pleasure than the print therefrom, and I venture to assert, that more than one now present, has many negatives in his possession from which he has never made a print, and probably never will; yet the desire to produce more negatives is never satiated. To such, the field presented by photo-micrography is an attractive one, full of novelties, of boundless scope, and readily entered upon by all.

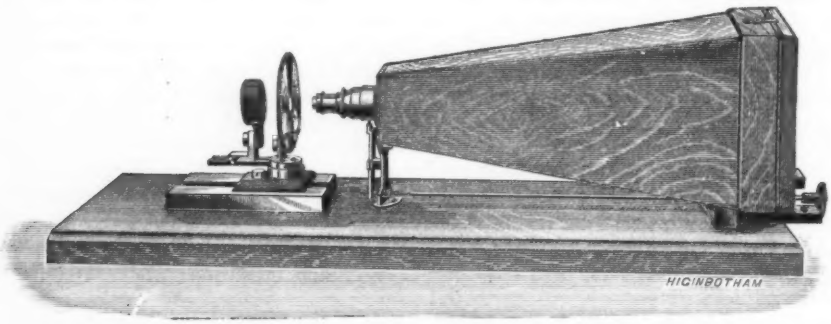
Many of our members were but a few short years ago enthusiastic microscopists, until lured from their first love by her younger and more attractive sister, photography. Most of them retain their now unused microscopes and cabinets of prepared objects. They have all the necessary materials and appliances for combining the science and practice of microscopy with the practice and art of photography, and could produce work which would be of practical and educational value to themselves and others, if they would only do so. A general advance in this direction is being made all over our own country, as well as in Europe, and I should be greatly pleased to see members of our own society joining therein.

The most simple method of making a photo-micrograph, is by means of a small camera or box, carrying a sensitized plate placed above the eye-piece of the microscope. My first work of this kind was done with the so-called Pocket Camera of Walker; a small square box without bellows, carrying a plate 2¼ x 3¼ inches, the focusing of which was effected by sliding the tube carrying the lens in an outer one, fitting it loosely enough for that purpose. Whilst examining the eyeless flea of the mole, one winter's evening, I was seized with a longing to photograph it. Acting upon the impulse, I removed the lens tube from this little camera, and found that the outer one, attached by its flange to the front of the box, exactly fitted over the eye-piece of my microscope, throwing a brilliant and sharply-defined image of the flea upon the ground glass. A plate holder and plate were quickly substituted for the

latter, and exposure made by guess work; the result being a fairly good negative, from which a lantern slide was subsequently made by contact printing, which will be shown on the screen during the evening. This was my first photo-micrograph, and opened up a new field, which I have since cultivated with both pleasure and profit.

This method of using the camera has since been elaborated by Dr. Mercer of Chicago, and a little instrument bearing his name, attachable to any microscope, is now a regular article of sale by photographic stock dealers. It is a valuable addition to the accessories of a microscope, especially so to the biologist, who frequently in his researches finds some subject the preservation of whose outlines would be of great value, but which undergoes such rapid changes that no time must be lost in so doing. With camera and ready charged plate holder at hand, an exposure can be made in a minute or two, and valuable details secured, which would otherwise inevitably be lost. The field of view, however, is extremely limited; only the centre of the very small plate is illuminated, and the entire results are of a temporary and unsatisfactory nature.

Later, Mr. H. F. Atwood, of Rochester, devised an apparatus for this purpose, combining both microscope and camera in one. Upon a solid platform is placed a cone shaped box, having at the large end, a focusing screen and plate holder, whilst the smaller end is terminated by a short brass tube with society screw, carrying any ordinary microscope objective. The focusing is effected by means of a rod passing under the body of the box to its rear, and terminating in a milled head. The glass slide carrying the object, is clamped upon a circular stage firmly fixed in front of the object glass; the illumination being from a lamp placed behind the stage, the direct rays from which are utilized without the intervention of any mirror. This is a fairly effective piece of apparatus, its chief defect consisting in the absence of a bellows body; the focusing screen and plate holder remaining at a fixed distance from the object, requires a change of objectives for any necessary change in the amplification. It answers the purpose of its design fairly well, but cannot be recommended for general work.



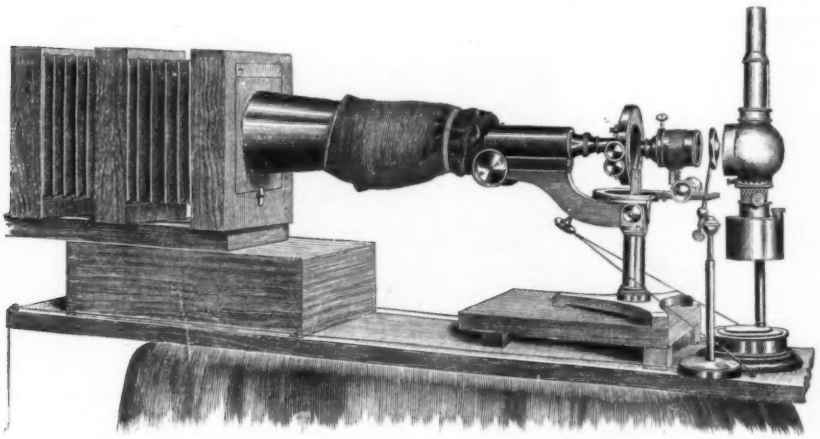
ATWOOD'S PHOTO-MICROGRAPHIC CAMERA.

Following my first experience with the Walker box placed over the eye-piece, the next advance in a practical direction was the employment of an ordinary view camera mounted on a tripod, and with the lens unscrewed from the flange upon its front. The microscope was placed upon a table with the body inclined to a horizontal position, the eye-piece removed, and the tube inserted into the body of the camera through the open flange; the tripod being adjusted at a proper height and position to suit the table. The entrance of extraneous light into the camera, through the open space between the tube and flange, was prevented by a piece of blackened card-board made to fit tightly to the mi-

croscope body. The lamp was placed on the table in the rear of the stage, and its light condensed upon the object by means of a bull's eye upon a separate stand. The result of the first exposure with this contrivance, (the subject being the tongue of a drone fly), was a negative full of fine detail, a vast improvement on my first attempt, but with a decided "ghost" in the centre, which you may see for yourselves, as it will now be passed around.

Since no authorities at my disposal threw any light upon even the existence of this "ghost," I was forced to seek its cause for myself, which I soon succeeded in doing; tracing it to reflections from the interior surface of the microscope tube. A cylinder of paper, covered with dead black velvet, or wool flock, placed within the body of the microscope, completely exorcised my ghost, and I was troubled by it no more. And here it will be proper to say that in using any microscope for photography, with a body from which the eye-piece has been removed, it will be necessary to thus line the interior with some non-reflecting material, to prevent the occurrence of ghosts in the negative. If, however, the exposure be made through the eye-piece, the lining will not be necessary.

The defects of this form of apparatus speedily became apparent. The bellows extension was not sufficient to give much of a range of magnifying powers with any given objective; the tripod was not steady enough to permit the use of any but very moderate powers; whilst microscope and camera being carried upon separate supports, were not equally effected by any jarring of the building by passing vehicles, or other causes; the result generally being, negatives somewhat blurred, and wanting in the crisp sharpness which the image presented upon the focusing screen. This led to the abandonment of the tripod, and the placing of camera, microscope and lamp upon a common platform, so that any tremor or motion was distributed alike to all parts of the apparatus, completely curing the blurring trouble.

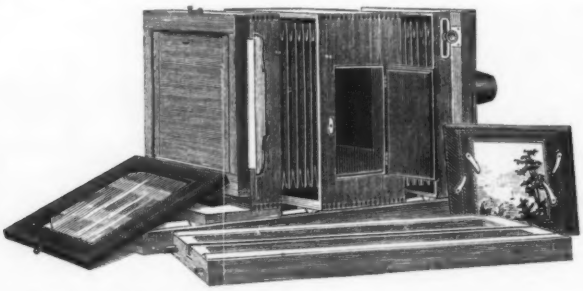


WALMSLEY'S PHOTO-MICROGRAPHIC CAMERA.

The practicability of photographing microscopic objects by lamp light, even with very high powers, having been fully demonstrated, improvements in the form of apparatus and methods of manipulation followed. A special camera was devised, with a cone-shaped front, to receive the microscope tube, and with the bellows in two or more divisions, allowing a long extension of the same, when increase of power was necessary; since, the farther the plate is removed from the object, the

greater the amplification with any given objective. The box and plate holder were square, so that the plate could be exposed in either horizontal or vertical positions, as best suited the object upon the stage, without having to reverse the camera. The holder itself was a single one (for reasons to be given hereafter), carrying a half sized plate (4¼ x 5½), and furnished with a kit for using a quarter-sized plate, when the latter should be necessary. This camera was firmly attached to the platform upon which microscope and lamp were placed, and the whole apparatus was eminently practical and efficient. I used it for more than a year, without modification, and remember it with a certain degree of affection, even in the presence of the more perfect and elaborate outfit which has supplanted it, and which I have the pleasure of exhibiting to you this evening.

In this improved form of camera the general features of its immediate predecessor have been retained. Size and shape remain the same, but the long V shaped ways, upon which the bellows slide are made in two sections, for greater convenience in manipulation when only a short extension is required. The central section of the camera is fitted with a removable division to which an ordinary rectilinear lens can be attached; access to which is had through a small light tight, door in the side of the box. The cone front may also be removed, and its place supplied with a board carrying a flange, to which the lens may be screwed; thus converting the box into an excellent copying camera. Kits to carry either half or quarter-sized plates, vertically or horizontally, are also supplied with this front, which is double shifting to allow the placing of any desired portion of a negative in proper position, when a lantern positive is to be made. In short the camera is now a most excellent enlarging, reducing and copying one, in miniature, replete with every convenience and appliance to be found in the largest copying boxes made especially for that purpose. It is no longer necessary to make the negatives with a view to printing lantern positives by contact: they can be reduced or enlarged to the proper size in the camera and are far sharper and better in every way than those made by contact in the printing frame.



WALMSLEY'S IMPROVED PHOTO-MICROGRAPHIC CAMERA.
Enlarging, Reducing and Copying.

Thus far the camera: a few brief remarks as to the microscope may not be amiss. Any stand, monocular or binocular, the body of which can be inclined to a horizontal position may be employed. In using a binocular stand it is merely necessary to withdraw the prism sufficiently to allow all the light to pass up the straight tube, and thus convert the instrument into a monocular. The eye-piece may be removed or not, as the operator desires; the former plan being the one generally adopted and producing, so far as my own experience goes, the better results. If the eye-piece is not used, the tube must be lined with some non-reflecting material, as before stated. A mechanical stage is a great convenience, and time saver, in centering

an object upon the ground glass, but is by no means a necessity; it should, however, revolve in the optical axis of the instrument if possible. A double or triple nose piece, carrying as many object glasses of different foci is also very desirable, especially when high powers are to be used, as an object can be quickly brought into its proper position in the field of view under a low power, when by revolving the nose piece, a higher one takes its place; and if the two are properly centered, the object will be found to occupy the same position in the new field of view.

The placing of the object on the stage of the microscope, and arranging it in such a position as to cast its illuminated image upon the centre of the ground glass focusing screen, are all to be done with camera closed up short, in which position the eye can readily see the image, whilst the hands reach the milled heads controlling the stage and focusing adjustments. But when the bellows are extended a foot or more, this becomes impossible, and resort to some other method of varying the focus is necessary. The plan I adopted at first, and have ever since followed, was the old but effective one, of a strong fine cord placed in a groove turned in the periphery of the milled head controlling the fine adjustment of the microscope, and passing through hook eyes on either side of the camera to its rear, where it is held taut by a couple of small leaden weights. A very slight pull on either of these, serves to change the focus in the most delicate manner, and this can be done whilst the eye is fixed upon the image on the ground glass.

I have used the term *ground* glass in connection with the fine focusing adjustment, but merely as a figure of speech. In reality, ground glass cannot be used for this purpose at all, as the very finest that could possibly be made is entirely too coarse to define sharply any delicate microscopic object. Its usefulness is confined to securing a full and even illumination of the field, and the arranging of the object in its proper position therein. These two essentials arrived at, we must abandon the ground surface in favor of something better adapted to giving a sharply-defined image of the magnified object. Many plans for effecting this have been published, but I shall at present notice only the two which I have used most successfully for some years. The first, which is useful for hurried work, consists in attaching to the centre of the ground surface of the focusing screen, by means of Canada balsam, a disc of thin microscopic covering glass about an inch in diameter. The balsam fills up the minute inequalities in the surface of the glass made by the grinding process, and renders the circle perfectly transparent. Now, if a Ramsden positive eye-piece, or any ordinary focusing glass adjusted to the thickness of the screen, be applied to the outer side thereof, the illuminated image will be seen clearly defined in this transparent circle with the most beautiful distinctness, when the proper focus is made with the adjusting cord.

This method, however, only allows that portion of the object which is in the centre of the field to be seen and focused upon, whereas it is frequently desirable to go all over the same to arrive at the best average adjustment, For this purpose, I use the following plan, which is so perfect in its results that I can conceive of nothing better: A sensitized gelatine plate, evenly coated, is exposed to a flash of light, and placed in the developing bath a short time, until it becomes somewhat discolored, or clouded over, but not long enough for it to acquire any density. It is then washed and fixed as usual; after fixing, and a prolonged washing, it is bleached with bichloride of mercury as for intensification, and again washed and dried, when it will be found to possess the finest surface for delicate focusing imaginable. And now comes in the use for the single plate holder, to which I have before referred.

Slide and back both being removed, the holder is reduced to a mere frame work, which is placed in position on the camera, the ground glass screen having been lowered out of the way. The bleached gelatine plate is now placed in the holder, (film side toward the image), where it occupies exactly the place that will subsequently be filled by the sensitized plate.

The positive eye-piece, or focusing glass, being now placed against the outer surface of the plate, and the eye applied thereto, perfect definition may be effected by means of the focusing cords; the proper position of the image upon tne plate having been previously secured through the medium of the ground glass.

A few words as to the objectives may not be amiss. For powers including one quarter inch and higher, no special corrections are necessary. I have had most excellent results with the higher powers of very many of the best makers both American and Foreign; and even the cheap French triplet quarters, have produced very good work without further correction. But for all lower powers a special correction to render the actinic and visual rays coincident, becomes necessary for perfect work. The Messrs. Beck furnish all their lenses, from three inches to four-tenths of an inch, with a convex lens of suitable focus," set in the posterior part of the mounting, which makes a perfect correction, and a negative sharply defined as the image seen upon the focusing screen.

The proper illumination of the object is of the first importance, since, if we fail in this, all our other efforts are of but little account. Various sources of light are at our command: the direct rays of the sun, diffused day-light, the electric light in various forms, magnesium ribbon, or the oxy-hydrogen jet, can all be used most successfully by those able to command time and apparatus. But my remarks at this time being intended mainly for the benefit of those who have only their evenings at their disposal, I shall confine myself solely to the consideration of that illuminator procurable by every one—a good lamp, burning coal oil. Any form capable of being placed at a proper height to suit the stage of the microscope may be used, though some are undoubtedly better than others. The one I have adopted, and find eminently useful, consists of a broad flat reservoir, with large capacity, carried at any desired height upon an ordinary retort stand, and using a duplex burner, with the flames placed at an angle to the plane of the stage, in order to avoid the dark spot in centre of field, which always results if the flames present their edges to the object slide. The stage of the microscope should be provided with a set of diaphragms of various sizes, the arranging of the object being done with a large opening, whilst the exposure is made with the smallest which will properly and evenly illuminate the field of view. If desired, a condenser can be used to concentrate the light upon the object; but for a long time I have entirely discarded its use with all powers lower than one-fifth of an inch, using the direct rays proceeding from the lamp alone. This gives a more evenly lighted field, and, although the length of exposure is somewhat increased, the resulting negative is better in every way than one made in a shorter time by a strongly concentrated light.

The difference in fact is very marked, and I would urge apon every one, using lamplight, to dispense with all condensers with moderate and low powers. With high powers, however, a condenser becomes necessary, and an achromatic combination of wide aperture, or one of the Abbé form, may be used with the best results. Some operators use blue or ground glass for toning and diffusing the light. In short the subject of illumination is an exhaustless one, and I shall not attempt to pursue it further at present. Neither can I give any certain rules as to time of exposures. The length of these vary greatly with the nature and structure of the subject, so that every one must learn to determine this for himself, as in ordinary photographic work. Using a given objective, and with the same plates, and illumination, I have had exposures vary from ten seconds to five minutes, regulated entirely by the difference in the color and structure of the subject to be photographed.

Almost any make of gelatine plates may be used, though some possess the qualities best suited to this class of work in a much greater degree than others. Extreme sensitiveness, combined with density and strong contrasts are desirable, nay necessary for most classes of subjects. Carbutt's specials, and the Seed plates are excellent;

but the very best for the purpose I have ever used are the "Diamonds" made by Richardson of Leominster, Mass. They are extremely rapid, developing with great vigor and density, and have a very fine grain, so that the most delicate details are fully shown. And for all delicate structures, especially finely marked diatoms I find it much better to develop for detail only; resorting to after intensification to obtain necessary density. By this means none of the finer lines or markings are obscured by too heavy a deposit; whilst the negative is quite as permanent as those not intensified, if it be first bleached in a solution of bichloride of mercury, and blackened by immersion in cyanide of silver, or a ten per cent. solution of sulphite of soda. Ferrous oxalate or pyro development may be used with equally good results. At first I favored the former, but of late years have in common with most others grown more and more accustomed to pyro, which with carbonate of soda, has given me results uniform in their success, and of a quality leaving little or nothing to be desired. I use no restrainer excepting the sulphite of soda in solution with the pyro, the resulting negatives being uniformly of a pleasant grey tone, entirely free from the yellow stains so often associated with the use of pyrogallic acid.

For making prints, bromide paper is especially recommended. It can be used in the camera for enlarging or reducing; or be printed by contact, by day or lamplight, as desired. It renders all delicate details better than albumen, the finished prints need not be mounted, for book illustrations they are perfect, whilst finally I think there can be no reasonable doubt of their absolute permanence. I will submit prints on both kinds of paper for your inspection and criticism; some of those upon the bromide, being contact, and enlarged prints from the same negative. The smooth papers, A and B, of the Eastman Co., are recommended, and if a glossy surface is desired, it may be obtained by squegeeing the print upon a sheet of polished hard rubber, from which it will peel off with a glazed surface when dry, as seen in the specimens now submitted to you.

Since the making of transparencies from microscopic negatives, differs in no wise from those of other subjects, I shall not detain you in alluding to them further than to repeat that reduction in the camera gives more satisfactory results than contact printing, and that this is the plan I almost invariably pursue, even if the negative be upon a quarter-sized plate.

It adds very greatly to the scientific value of a photograph of any microscopic object, if the exact magnification be measured, and stated thereon. To do this separately with each exposure, would entail an expenditure of time and labor that few would care to assume, but if each objective be carefully measured with the camera closed, and also opened to the full extent of the bellows, and notes thereof preserved, it will be an easy matter to calculate the exact amplification used with each exposure. This measurement is very easily made. A stage micrometer ruled in 1–100 and 1–1000 of an inch is placed upon the stage of the microscope, and the image thereof focused upon the ground glass, where the value of each division is readily determined. I would advise every one turning his attention to this branch of photography, to make such a series of measurements at the outset.

As previously stated, any microscope with a joint for inclination of the body to a horizontal position, may be employed in photography; but those having a short tube of large diameter will do better work than those with long ones. It is highly desirable that the rays of light, after passing through the objective, should be allowed to diverge speedily as possible. Where they are confined to the limits of a long tube of small diameter, it will be found that only a small circle of light will be thrown on the ground glass when the camera is closed up short, and that it must be lengthened to a considerable extent before the entire plate is illuminated. In order to overcome this objection, I devised, some years since, a stand from which the compound body may be entirely removed, and replaced by a cone-shaped tube which flares away from the back of the object glass, allowing the image-bear-

ing rays to diverge at once after leaving the lens. This stand was made for me in the most satisfactory manner by the Messrs. Beck, of London, and has since done eminently good work, both as a table microscope and as an adjunct to my microscope camera. I have not found it convenient to present it to you in person this evening, but the photographs which I now hand around for inspection, exhibit it very clearly in its dual capacity. It has a mechanical stage, revolving concentrically in the optic axis, and large milled heads control the focusing adjustments, giving very delicate and smooth movements to the same. So satisfactory has it been in all its performances, that duplicates have been made and furnished to a number of our leading microscopists throughout the country. And it may not be amiss for me to add, that the camera I have described has become a recognized instrument of research and experiment in very many of our first laboratories and colleges, and that the demand for it is growing steadily.

Thanking you for your kind attention, I would once more present the attractiveness of this branch of photography, and urge upon you to try it for yourselves.

The Photographic Society of Philadelphia.

A stated meeting of the society was held on Wednesday evening, December 1, 1886, with the President Mr. Frederic Graff, in the chair.

The Secretary reported the resignations of Edgar P. Earle, Dr. John G. Lee, and Prof. W. D. Holmes which were duly accepted.

The Committee on Membership reported the election of the following active members: Messrs Clarence B. Moore, Henry H. Suplee and Charles P. Sinnickson.

Nominations for officers and committees for 1887 were then made.

Mr. John Sartain, in charge of the Art Department of the forth coming American Exhibition, in London, called attention to the enterprise and to the circular in regard thereto, which had been mailed to the members. He stated that it was intended that a prominent position should be given to photographs, and that many fine exhibits had already been promised by eminent photographers in various part of the country. He was anxious to have Philadelphia well and fully represented, and particularly desirous that the Photographic Society should make a good display, He asked the earnest consideration of the matter by the members in order that steps might be taken in good time to send exhibits either in the name of the society or by the members individually.

Mr. G. C. Morris moved that action be deferred until the next meeting, in order that an opportunity should be afforded the members to give the subject due consideration. Carried.

Mr. John G. Bullock moved that the Society give a public exhibition of lantern slides during the month of January, and that a committee be appointed, with power to act, to make the necessary arrangements for such an exhibition. Carried.

The Chair appointed Messrs. W. H. Rau, Frank Bement and Galloway C. Morris on this committee.

The paper for the evening was read by Mr. W. H. Walmsley, his subject being "Photo-micography." (See paper.)

Mr. Bement asked whether the apparatus shown by Mr. Walmsley was adapted to photographing opaque objects, stating that he had endeavored to photograph some gold crystals, but had no success.

Mr. Morris thought that the difficulty was owing to the color of the object. The form of the crystal was very beautiful, but it would probably be almost impossible to photograph them.

Mr. Carbutt suggested a trial with orthochromatic plates.

Mr. Wood showed a negative on an 6½x8½ plate, which had been enlarged to 8x10. It was a film negative, which had accidentally fallen into his waste bucket. When found, it had increased in size to the above dimensions. Removing it from the bucket, he transferred it to a glass plate. The expansion had been very uniform, but in drying the film had been torn in several places from the contraction of the gelatine skin on which the negative had previously been mounted.

He also suggested a simple plan for reproducing negatives from silver prints, which consisted in making the print translucent by any of the processes used with paper negatives, and from it making a second print, which, being rendered translucent, could be used as a paper negative. One advantage he claimed was in being able to shade certain parts in printing both the positive and the second negative, so that the latter should be an improvement on the original.

Mr. Carbutt thought it would be better to use a gelatine plate for the second negative. Adjourned.

ROBERT S. REDFIELD,
Secretary.

Reminiscences of Travel of an "Old Time Amateur."

(Continued from October Number.)

To the Editor of the American Journal of Photographery.

DEAR SIR:—Upon entering Germany in June, 1878, my first preparation for the photographic campaign was to revisit the celebrated Rathhaus in Berlin, which I had already photographed before. Although I had been absent from the place for quite a long time, it all seemed very familiar to me. Why? because the act of photographing the buildIng, together with critical examinations and retouching of the negative afterwards had impressed it upon my mind. Supposing that any one desired to become thoroughly familiar with the general outline or even (to some degree) with the details of a building, I should advise him to photograph the object and then go over the negative carefully with a magnifier at his leisure. As a proof of the efficiency of this plan, I may mention that after retouching a very defective negative of the Cathedral of Notre Dame in Paris, I was so sure of the form, that I have had no difficulty in being able to tell even *parts* of the building as appearing in various pictorial representations.

The subjects that I made it a point to choose for the camera were ancient buildings and streets *i. e.* if there were no landscapes. The towns and cities of Europe will be found to differ considerably in the amount of old and picturesque material offered; the more busy and commercial centres not being (as a rule) so filled with old material as some of the smaller and less often visited places. I know that I am perhaps too fond of the antique, but in places like Europe it is well for the traveller to remember that the new drives out the old somewhat as it does here in America, only by no means to the same degree. It was for this reason that I always found abundance of photographic subjects in the smaller towns; sometimes with historic association and sometimes without. Some of the most odd and quaint of my subjects have been, so to speak, stumbled upon by chance.

The first real photographic work that I undertook in this year's visit to Germany was at Nuremberg. To one knowing only such places as Berlin, Hamburg, Leipsic, etc., this wonderful old city would offer the greatest differences, from a pictorial point of view. To the architect, antiquarian and student of German history, and literature as well, Nuremberg simply overflows with interesting matter. For my own part, I spent the better part of a week there, and was so taken up in wandering about the streets and making what exposures I could, that I hardly saw the inside of any other building than the hotel. One exception must be made here, though—the residence of Albert Dürer I visited, both for its historic memories and its pictorial qualities, and was well rewarded. I remember thinking that there were some neighborhoods where almost every house, if photographed, would be found to offer something of interest.

The actual photographing of the views I selected passed off quietly, without annoyance from people and with no little fatigue to the operator. I suppose there are some who would simply rush out with the camera in such a place as this and satisfy their enthusiasm by "firing away" at anythiug that pleased at the moment. I never liked this way of doing; always getting better results and enjoying myself more at the same time by thoroughly exploring the localities marked out for work, taking no camera and just leaving the eye

and the mind to form as cool a judgment as possible in the selection of subject. That which was best and most suitable for photography was soon settled upon, and when out with the camera little or no time was consumed in selecting the view.

I have spoken before of the miseries of bed-room development; of all these, the disposal of the slops and washings was the most trying. Sometimes it seemed impossible to do so, and many a night have I slept with a basin or slop-jar (a very rare article, by-the-by, in the smaller European hotels) full of reeking pyro, silver, and cyanide close to the foot of the bed. One night in Nuremberg, I watched my chance and quietly tipped the contents of the basin into the gutter of the piazza upon which my room opened. I thought that there was underground drainage, but was mistaken; a tremendous noise, made by the falling water in the pipe, together with a scuffling of feet and talking below stairs, soon proved to me that discretion might be the better part of valor even in such a matter as this, so I quietly put out the light in my room, not to attract attention. It was well I did so, for I afterwards found out that I had flooded a new light-colored concrete pavement, and should certainly have been arrested if it had been proved upon me.

Flying visits to Ratisbon and Munich were followed by a due southerly course over the Brenner Pass, stopping, however, at the most charming town of Innsbrück. We were now fairly in the Tyrol, which is by no means inferior to Switzerland in photographic subjects. In fact, there are many places where the remains of domestic architecture are perfect, more so, I think, than in Switzerland. There, with quaint streets and curious houses, backed up by mountains of just the right height and at just the right distance to photograph effectively, picturesque and beautiful combinations may be made *ad infinitum*.

Innsbrück, Stertzing, Bruneck, Niederdorf, and Foblach were all before the camera, and now we finally entered the "Dolomite" region. The mountains here consist largely of magnesian limestone and I do not think that even the most confirmed admirer of mere shape and form could help being impressed with the extraordinary colors seen on them. Their forms alone are most wonderful; fearful perpendicular walls, with summits crenated or even at times resembling the prongs of a fork; indeed it would not be too much to say that the shape of many of these formations borders on the fantastic, an effect which is increased by the almost kaleidoscopic play of color. Even the most tame of them will present the grey ashen tint of the limestone splashed all over their hugh masses of crimson (probably from iron in some form) together with every imaginable shade of black and yellow. These tints of course are seen most distinctly when near at hand, but the distant mountains are perhaps still more beautiful to the eye or to the painter, for as the region is just on the borders of sunny Italy, the well-known and exquisitely delicate blue veil in the air plays its part in rendering these landscapes perhaps the most wonderful and attractive in the whole Alpine region.

At the time I visited this place, there had been comparatively little photographic work done there, most of it however, I was glad to see, was on plates 11x14 inches and over. It would be a fine thing for some of our enterprising photographers either professional or amateur to make a trip there with the "impedimenta" and learn how to expose for the noble snow-capped summits and yet get out detail in the dark evergreens of the foreground. My word for it, apart from photographic pleasures, they would never regret having gone there.

Very truly yours,
ELLERSLIE WALLACE.

Critique of American Work at the Brunswick Exposition.

By: FR. EILENDER, Cologne; W. KUHN, Leipzig; FR. MULLER, Munich.

We take the following critique of the work sent to the Brunswick Exposition from the report as printed in the *Deutsche Photographen Zeitung*. The views held by the German photographers on American work may be of interest to our readers,

although many will differ with the judges. We have purposely omitted all names.

"Much pleasure has been occasioned by the response made by the photographers of America to the call of the German Photographic Association.

An individuality is stamped upon the entire collection, essentially distinguishing the American pictures from the work of the German photographers. The distinction is especially manifest in the management of posing and illumination.

Whilst a certain quietness characterises the work of the German, degenerating, it is true, in some cases even to insipidity; with the Americans, one perceives a partiality to animated poses.

In this province of taste some are pre-eminent, and know how to create effect in posing and lighting, accompanied by a certain elegance of style; whilst others, possessed with this mania for effect, wander off in devious paths into the ways of false taste.

This constant endeavor, after strong effects, the besetting sin of the Americans may have its origin in the rigorous demands of the American public, to whose ideas of taste, often eccentric, the photographer is obliged to pay court.

—— send us a collection of six pictures. Three of which, representing children, are worthy of special note; making a most agreeable impression, chiefly by the uncommon clearness of the lights and shadows.

Sharply contrasting, as regards illumination, is another picture, a head of a lady, represented in the strongest light effect, and strikingly exhibiting the skill of the operator; for despite the strong contrast in light and shade, all hardness is avoided, only there is a slight lack of detail in the shadows, especially in the cheek.

There is a want of repose in the whole figure (profile). The too artificial folds of the drapery of the antique costume are not suited to the position of the figure, and do not cling gracefully enough to the form beneath. This same judgment must be passed in part upon another picture, representing a lady with a bow and arrow. This is besides somewhat injured in effect by the unfavorable impression produced by the disposition of the perpendicular lines of the figure, and the horizontals of the background. The technique of all the work is excellent.

—— exhibits noticeable work, nevertheless, his pictures suffer from constrained and unnatural positions of the figures. This is especially striking in the pictures of women and children (vignettes).

The portraits of women (standing entire figures) leave us to suppose that the pictures were made chiefly out of regard for the dresses, jndging from the dominant position of the train in the picture; although it would have been more advantagious for the artistic effect if this part of the subject had been somewhat subordinated.

Lines which are by the nature of things always perpendicular, as columns and corners of rooms, should likewise be represented in the photograph.

—— here makes himself guilty of a bold thrust against the general ideas of things.

Another portrait of a lady (entire figure sitting) shows the same careful treatment of dress, so that the thought in the holder is again prominent that the garment is the most important feature in the picture.

A peculiar misfortune in this picture is the want of harmony of the figure with the surroundings, standing out, as it were, in relief from the uniformly dark background in consequence of which it appears not to be resting upon the ground but to be floating in the air.

The vignette of the lady in profile makes the most favorable impression. The whole collection is characterised by good technique.

——. The general yellow tone of the pictures exhibited acts very unpleasantly upon the taste, but in respect to the positions they are successful. The lady with the guitar demands special notice, likewise the reclining figure of a child. The idea is good and the expression of the face charming, but unfortunately the picture is marred by a very ugly doll.

The picture entitled, An Indian Woman, (entire figure), creates an unpleasant effect

by the glaring and harsh lighting. The genuineness of the model as an Indian woman, seems to us rather doubtful.

The photograph representing two ladies (entire figure) with great trains, makes the impression upon us that the one lady is the reflection, in the mirror, of the other, reminding us forcibly of the insignia of a double eagle, which has the two heads close together.

The exhibitor has here not only made no attempt to overcome the difficulties in the way of artistic posing inseparable with immense trains, but has made more prominent the unpleasant feature by the peculiar posing of the figure.

The work of the exhibitor is characterized by a constrained appearance in the posing of the figure. The pose of the lady upon a lounge creates an impression upon the beholder that she is in constant danger of falling and is making an effort to keep her place.

The standing figure in the garden (simulating a marble statue) operates very distractingly by the character of the arrangement. The ungraceful folds which do not conform to the shape of the body increase the unfavorable effect.

The picture, A Boy Fishing, shows a happy choice of subject, and its treatment is good; but surely it is an error to represent the hat floating in the air before a gust of wind, and to depict the hair of the boy unaffected by the breeze.

The vignettes of ladies despite the excessive retouching, are not very effective. The technique may be accounted very good.

—— exhibits photographs which endeavor to convey an idea of the plasticity of marble or plaster casts. A deflection from the line of taste which we Germans cannot appreciate or understand. The folds of the drapery upon the figures are far removed from the noble grace and harmony which characterise in so high a degree the antique sculpture, and show to especial disadvantage by the unorganic arrangement and want of grace. The manner in which the hair is photographically given is impossible in marble from the condition of things.

——. The works of this exhibitor attract attention by their peculiar form, which is very charming for the children, but not so suitable for the other pictures. The technique corresponds with the excellence of the work.

——. If the views of —— are considered in reference to their value in trade, they may be accounted good. They are much enhanced by the excellence of technique, which is especially manifest in the picture of ——. The rest of the landscapes are to be regarded less as views than as peculiar pictures. The pictures of —— have a peculiar charm, but the copied in noon (which by the way, is too small) weakens the favorable impression.

—— presents three pictures of theatrical characters, which have nothing striking to recommend them. The technique is injured by the unpleasant yellow tone.

——. The four large size heads (ladies) are crude in rendering, and are destitute of all delicacy of tone.

The two large heads (men) are too harsh; that is to say, too white in the high lights, and too pitchy in the shadows. The retouching is also negligent. The seated figure of an old lady is also subject to the same criticism of harshness, and the unpleasant impression is heightened by ungraceful lines in the background and in the figure.

Considerably better, and in a different key from the other work, is that of a lady three-quarter length; but even here there is an unevenness, especially in the excessive darkness of the mouth. The same criticism is in part applicable to the smaller sizes.

—— exhibits a number of sea scapes, which show a general neatness of work, but have nothing striking from an artistic point of view.

——. A general harshness characterises the work of this exhibitor, affecting the eye very unfavorably, especially in the case of the vignettes of men, heightened by the negligence in retouching.

—— unites in his work pretty near all the faults of his countrymen. Harshness, cold illumination, want of sharpness, incomprehensible retouching, and ungrace-

ful posing. The pictures show a slovenliness of work, and are by far the worst examples which America has sent us.

The Auxiliary Lighter.

An Apparatus for Introducing Diffused Light in the Camera during Exposure. Patent applied.

BY EUGENE HIMLY.

The subject of preliminary and subsequent lighting has, since the year 1870, engaged the attention of many investigators; but about 1876, on the introduction of gelatine plates, it was not considered of any practical value, although the results obtained were not unfavorable. To those who wish to pursue the matter further, we recommend the works of Professors Vogel and Eder, who have published valuable papers on the subject.

During the past winter the idea occurred to me to subject the sensitive plate during exposure to the influence of diffused light in order to support the action of the chemical rays coming through the lens. My first endeavor was to direct the diffused light to the upper part of the plate in the Camera, inasmuch as this portion often shows little detail in the resulting negative.

The experiment succeeded, and I continued my labors, so that an accelleration was given to the whole plate without encountering the invasion of fog, which was sure to present itself by earlier methods.

In the construction of the apparatus it is necessary to prevent any action of direct light upon the plate. The object is accomplished by the employment of a light-wave-breaker (licht-wellen-brecher). To devise an instrument suitable for the purpose, caused me much labor in experimenting; but as my efforts were crowned with success, I do not regard the pains bestowed This instrument which I call an auxiliary lighter (Hülfsbelichter) may be attached to the ordinary camera front, and is constructed as follows:—

In the camera front in which the lens is screwed at the top, a slit is cut 1½ c. c. in width obliquely upward; and at the bottom another slit obliquely downward. These slits are nearly the breadth of the board. On the sides are cut holes obliquely instead of slits, so that the stability of the front may not be injured. The lens is thus surrounded, by a quadrangle of openings through which light penetrates the camera.

To prevent the passage of light in the camera a frame, running in grooves, is attached in front of the board, which can easily be raised by the hand until arrested by a spring, in which position the light can enter.

If it is desired to exclude the light, the button of the spring is pressed and the frame is released, and by the action of a spiral spring returns quickly to its former position.

Direct light impinging upon the plate causes fog; it is, therefore, necessary to employ the light-wave-breaker, which consists of a blackened piece of tin, cut square in the middle to give free play to the objective. Above and below it is bent inward and fastened by long screws at the four corners, upon which the tin approaches more or less the board front, by which means the light is made stronger or weaker at pleasure.

By changing the direction of obliquity of the tin, it is possible to direct the light to any desired part of the plate which is of value in certain kinds of exposure.

The light-wave-breaker distributes the light to the walls of the camera, whilst the square opening allows the diffused light to accompany the direct light coming through the lens.

From experiments made with the use of this apparatus by myself as well as Mr. Haberlandt and the Photographic society, are advanced the following results:

With dry plates as far as exposures of three seconds or more are concerned, the auxiliary lighter is of good service.

With instantaneous exposure the application is of less advantage, although the accelleration is appreciable.

During the winter months there is a necessity for longer exposures, especially with the large sizes, and it is advantageous to have the accelleration during the exposure.

In the employment of collodion for reproduction work, the use of the auxiliary light is of great advantage.

The time of exposure in clear weather being reduced one-half, in cloudy weather one-third.

The Photographic Society of Berlin made a large exposure on an oil painting during very foggy weather, and without the use of the apparatus the time required was 15 minutes, with the apparatus 10 minutes.

Although the latter is 5 minutes less exposure, it is as full of details as the first, and without a trace of fog. Practical workers, who examined the copies, gave their opinion that there is more modelling in that taken with the aid of the auxiliary lighter.

We have, therefore, a means at hand to shorten the time of exposure with weak objectives, by the employment of the auxiliary lighter.—*Wochenblatt.*

OUR illustrations for the month are from negatives made in the studio of Messrs. Stuber Bros. of Louisville, Ky., who kindly responded to our request for pictures for our Journal. The negatives are excellent in technique, and the selection of poses animated and novel.

COMPARATIVELY little has been done in a scientific, or even in a practical, way to establish any special mode of development.

A certain tendency will direct one or the other into a channel of popularity, and par-excellent virtues are claimed for it which its rival is thought not to possess, or to have in a less degree only.

A photographer of ability will produce marvellous results with his favorite developer, and the consequence is, it is given a new trial, and for a while is in the full stream of favor.

Just now alkaline pyro is in the ascendency, and the consequence is ferrous oxalate is suffering another declination.

Very few of the professional photographers in this section of the country use ferrous oxalate. Pyro and potash, or pyro and soda, or pyro with potash and soda, are the favorites. Ammonia is in less repute.

Even where the manufacturers recommend oxalate, as in the development of the stripping films, pyro is used in preference, and the excellent results we have seen would seem to justify its use. Mr. W. H. Rau, who made an extended trip with the roll holder and Eastman films, has developed all his negatives with pyro and potash, and nothing could exceed their brilliancy.

It would be impossible to determine from the various modifications of the pyro development any one method suited to all cases. The mode of development depends much upon the quality of the plate employed, but it would seem that with any make of plate the best plan would be to discover at the outset the minimum amount of pyro that can be used to give satisfactory results, and to be very sparing in the use of bromide of potassium.

A summing up of the experience gleaned from gallery work, where soft yet brilliant negatives are produced, leads us to this conclusion.

THE discussion concerning the permanency of bromide prints seems to have inspired photographers with a fear that silver prints may "feed time with their decay." To prolong their existence, they are subjected to an extra washing to eliminate the last trace of hypo; despite the warning which has been frequently given that this prolonged washing may accellerate their tendency to fade.

One thing is certain, prolonged washing does not contribute any thing to the brilliancy of silver albumen prints. On the contrary, they frequently look wan and pale after a twenty-four hours' deluging in the washing tank.

We believe it was Bunsen who said that a chemical precipitate is thoroughly washed with twelve times its volume of water, the water being applied in small quantities at a time. Two or three hours of washing, with frequent changes of water, would seem therefore sufficient for paper prints. We do not give negatives one-tenth the washing we give prints, although the elimination of the hypo from the gelatine is not easily effected.

At any rate, let us have bright, beautiful prints, if they will not outlast the doomsday.

December Bargain List.

Accessories:

1—Papier Mache, Fire Place and Cabinet combined, fair condition, . . 8 00
1—Papier Mache Pedestals and Bases, good order, each 3 50
1—Papier Mache Wainscoting, fair order, 3 50
1—Universal Position Chair, Crimson Terry; all Attachments except Baby Chair; good as new 30 00
—Spencer Head-rest 11 00
1—Drapery 4 00
1—Drapery 6 00
1—Centennial Camera Stand, in good condition 11 00
2—Tall Head Rests, price each 2 00
1—Papier Mache Log, 2 feet long . . . 2 00
1—8x10 Osborne Interior, "new," light left of subject 16 00
1—20 inch Eureka Burnisher, good as new 20 00
1—Pharaoh Position Chair 20 00
1—Seavey Rock, new 4 50
1—14 inch Eureka Burnisher, Entrekin 20 00

Camera Boxes.

1—5x8 Tourist Outfit, including 5x8 Tourist Camera Box, 2 Daisy Plate Holders, 1 Extension Tripod, and 1 Canvas Carrying Case, very little used. Price, new, $40.50, will sell for 30 00
1—4x7½ Stereo Box (wet plate) and Plate Holder, fitted with a matched pair Zantmeyer Lenses 30 00
1—6½x8½ Portrait Box and Plate Holder, fair condition 6 00
1—8x10 American Optical Co.'s Camera Box and Plate Holder, in good condition 12 00
1—5x8 A O Co. first quality box, 4 double holders, carrying case tripod.
1 5x6 Dallmyer R R Lense, used very little, good as new 68 00
1—14x17 A. O. C. Camera, Double Swing, with Zentmayer Combination Lens 75 00
1—½ size Am. Op. Co. D. S. B. Portrait Camera, fitted with ½ size Ross Lense 45 00
1—5x8 Am. Op. Co. Camera 6 50

Lenses.

1—4x4 Darlot Portrait Lens, with Rack and Pinion Movement and Central Stops. Very little used. 25 00
1—4x4 C. C. Harrison Portrait Lens, with Rack and Pinion Movement. No Central Stops. 25 00
1—5x8 Waterbury Lens 2 50
1—13x16 Harrison Globe Lens W. . . . 20 00
1—1-4 Size Darlot Gem Lens 3 00
1—11x14 C. C. Harrison, Central Stops. 35 00
1—Matched Pair Ross Symetrical Stereo Lens, 4½ in. focus. By using back combination only will cover 5 x 8 plate full; will be sold singly or in pair. Price each, $25, per pair . . 45 00
1—8x10 Ross Rapid Symmetrical . . . 55 00
1—Finder 2 25
1—6½x8½ Walmsley Lense 36 00
1—Prohs Shutter No. 2, Pneumatic release 10 00
1—Matched pair German Stereoscopic Lenses, in good order. 15 00
1—Matched Pair imitation Dallmeyer Lenses, per pair. 12 00
1—½ size Holmes Booth & Hagan Lense. 12 00

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MR. THOS. H. McCOLLIN,

DEAR SIR:—Learning that it was the intention of the WOODBURY DRY PLATE CO. to manufacture a plate that would be of an excellent quality, and above all of a uniform standard of excellence, immediately on their coming upon the market I purchased and used them. The work which I did upon them was of so remarkable a character, that I feel it due to the maker that I should say a few words in approbation of his skill. The plates are heavily coated and appear to be rich in silver, and it is a perfect delight to develop them. I do not use the formula for development given with them, but my own. I prefer pyro and ammonia as a developer for dry plates. Now the beauty of these Woodbury plates is, that they come up slowly and may be allowed to remain it seems almost an indefinite time in the developer without the slightest tendency to fog or dim in the deepest shadows, and during this time the image is growing wonderfully in refinement of tones. When you can get a negative that is sufficiently intense in a few points of high light to leave the white paper and absolutely clean in the touches of deepest shadow so as to print a clear black with every possible gradation of tone between, then you have about perfection, and I attribute it to this cleanness and slowness of developement that these plates realize, in a wonderful degree the texture of objects.

All specks from dust, spots and stains in negatives by giving a surface upon the finished print destroy the appearance of relief—to exemplify what I mean, all who enjoy looking at stereoscopic pictures, know how the effect is marred by a spot or blemish on one of the prints—and the impression on the eye is much, the same though in a less degree with ordinary prints. Should the Woodbury plate maintain its excellence, which there is every reason to hope it will, those practicing photography, will enjoy that happiness which success only can give.

XANTHUS SMITH.

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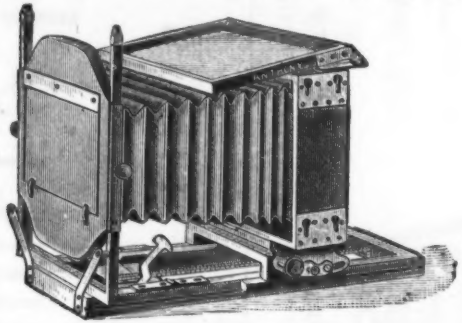

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